

**FUTURE FISHERIES IMPROVEMENT PROGRAM  
GRANT APPLICATION**

*(please fill in the highlighted areas)*

**I. APPLICANT INFORMATION**

A. Applicant Name: Trout Unlimited

B. Mailing Address: 111 N. Higgins St, Suite 500

C. City: Missoula State: MT Zip: 59802

Telephone: 406-543-1192

D. Contact Person: Rob Roberts

Address if different from Applicant:

City:  State:  Zip:

Telephone:

E. Landowner and/or Lessee Name  
(if other than Applicant): Lolo National Forest

Mailing Address: Building 24, Ft Missoula

City: Missoula State: MT Zip: 59804

Telephone: 406-329-3950

**II. PROJECT INFORMATION\***

A. Project Name: Sawpit Creek Mine Reclamation Project

River, stream, or lake: Sawpit Creek, Ninemile Creek Watershed

Location: Township 17N Range 24W Section 20, 21

County: Missoula

B. Purpose of Project:  
Improve channel morphology and stream and floodplain function through removal of mine tailings and channel reconstruction. Restore fish passage and connection with main-stem Ninemile creek.

C. Brief Project Description:

Sawpit Creek is a tributary to upper Ninemile Creek and has been extensively mined throughout the past century. According to BLM LR2000 records, there are over 100 closed mining claims in the watershed. The most recent activity included a claim located at the mouth of Sawpit Creek. In 1981, a mining operation logged 4 acres, worked 3 draglines and 2 dozers. The operation worked around an existing diversion of Sawpit Creek. Records indicate that Sawpit Creek was later relocated to a different channel by the miner.

Forest Service stream channel survey results from 1991 and 1994 describe a reach in the east half of section 20 as a B5a Rosgen type. Water surface slopes were 4% and 6% in surveyed reaches. Sawpit creek exits mature forest into a historic mining area and encounters a slope decrease. It flows through an area of heavy dredging and landscape disturbance. Banks in this area are generally composed of sand and gravel, and the stream is confined to a manmade gully. The most significant effect in this area is the steep eroding bank and significant dredge cut to the north of the stream channel. There is also active bank erosion occurring just before Sawpit enters the Ninemile Creek valley (see attached Figure). The red areas indicate erosion of banks consisting mostly of unconsolidated deposits. These banks have no vegetation along the stream channel. A 45' long by 30' wide dredge pond exists just before entering Ninemile Creek. The stream length through this area is about 1,000 feet. The mouth of Sawpit Creek flows through a dredge pond, and little standing riparian vegetation was noted in a survey of the creek by Montana Department of Environmental Quality in 2003.

As part of this project, 10,000 cubic yards of historic dredge tailings will need to be excavated and regraded to create a functioning floodplain. Following earthworks activity, approximately 1,000 feet of streamchannel will be fully or partially reconstructed on Sawpit Creek. New channel slopes will range from 3.6% to 6.5%. Suitable large rock for instream grade control will be identified and segregated during excavation of the tailing piles and stored on-site for use during channel construction. Boulders and large cobble will also be hauled to site as needed. Based on the estimated project length and channel slopes, approximately 50 step-pool structures will be required for the project and will be constructed using large clast boulders and log structures, with a footer depth of 2 feet. Randomly placed boulders and large rock in the tread between steps will create heterogeneity and habitat. Based on reference surveys and hydraulic analyses, the stream channel will have a bankfull width of 8 feet and a bankfull depth of 1.5 feet. The floodplain will be created 30 feet on either side of the channel with 10:1 slopes. Streambanks will be stabilized by creating a coarse cobble toe below baseflow elevation and installing vegetated soil lifts to bankfull dimensions. Soil lifts will consist of sorted topsoil wrapped in biodegradable erosion fabric. Willow cuttings will be placed in the soil lift at approximately 2 cuttings per foot and backfilled with topsoil. Coir logs will be randomly interspersed in the soil lifts to provide moisture retention and growing medium for cutting and container stock. Container plants (5 gallon) will be planted at 5 foot spacing.

The project is part of a partnership between TU, Missoula County and the Lolo National Forest. Please see attached photos for examples of construction techniques from past projects on Mattie V and Twin Creek, completed in 2010 and 2012, respectively.

D. Length of stream or size of lake that will be treated: 1,000 feet

E. Project Budget:

Grant Request (Dollars): \$ 31,800

Contribution by Applicant (Dollars): \$ In-kind \$ 6,400  
(salaries of government employees are not considered as matching contributions)

Contribution from other Sources (Dollars): \$ 121,690.50  
(attach verification - See page 2 budget template)

**Total Project Cost: \$ 159,890.50**

- F. Attach itemized (line item) budget – see template
- G. Attach specific project plans, detailed sketches, plan views, photographs, maps, evidence of landowner consent, evidence of public support, and/or other information necessary to evaluate the merits of the project. If project involves water leasing or water salvage complete supplemental questionnaire ([fwp.mt.gov/habitat/futurefisheries/supplement2.doc](http://fwp.mt.gov/habitat/futurefisheries/supplement2.doc)).
- H. Attach land management and maintenance plans that will ensure protection of the reclaimed area.

### III. PROJECT BENEFITS\*

- A. What species of fish will benefit from this project?:

Sawpit Creek and upper Ninemile Creek host a mixed assemblage of native westslope cutthroat and brook trout. Past mine reclamation projects on tributaries to Ninemile Creek have shown an increase in native westslope cutthroat populations.

- B. How will the project protect or enhance wild fish habitat?:

Baseline data collection efforts on Sawpit Creek show a lack of pools, large woody debris and complex habitat in the lower reaches near Ninemile Creek. Results on Sawpit Creek should closely mirror results from the Mattie V Creek project, where pre-project measurements showed an average of 5 pools per 100m in the impaired reach and 25 pools per 100m in the channel post-restoration. Pre and post macroinvertebrate sampling on Mattie V Creek also showed a marked difference in the diversity and density of macroinvertebrates in the newly constructed reach.

- C. Will the project improve fish populations and/or fishing? To what extent?:

Pre-restoration fish sampling on the Mattie V Creek project showed an average of 8 fish per 100m in the impaired reach. Fish were predominantly brook trout. Post-restoration fish sampling in the newly constructed reach showed 35 fish per 100m with a mix of westslope cutthroat and brook trout. This project will be similar to the successful Mattie V Creek and Twin Creek projects in the methodologies and techniques employed. The project team believes that the degraded habitat at and below these mine sites is partially responsible for the low densities of fish and presence of non-native fish. Further post restoration sampling on Mattie V Creek and other projects will continue to help show the impact of these projects on native and wild fish populations.

- D. Will the project increase public fishing opportunity for wild fish and, if so, how?:

Sawpit Creek is currently diverted into a dredge mining pond and a steep chute on the lower end. Reconstructing Sawpit Creek into a more natural planform and pattern will present an opportunity for public fishing for wild fish on public land and contribute to improved watershed conditions on Ninemile Creek.

- E. If the project requires maintenance, what is your time commitment to this project?:

Trout Unlimited has included post project maintenance in all reclamation plans for projects in the Ninemile Creek drainage and has continued to monitor projects, like Eustache Creek, which were completed 7 years ago. For example, on the Mattie V Creek project, TU and the Lolo NF set up water sprinklers on the project site, fenced the riparian corridor and dedicated manpower to post project weed treatment and soil amendment as required by monitoring. TU has full time staff dedicated to project planning and these maintenance activities, including seasonal field technicians.

- F. What was the cause of habitat degradation in the area of this project and how will the project correct the cause?:
-

Approximately 4 acres in the lower Sawpit Creek watershed were disturbed by placer mining and associated activities such as road building and clearing. The mining areas have been abandoned by the operators and left in an unreclaimed condition, and there are no records with the Forest Service of active mining claims within the watershed. Due to this past mining activity, Sawpit Creek has been heavily altered, especially in the lower reaches near its confluence with Ninemile Creek. Problems include impaired habitat, channel straightening, dewatering and a lack of connection with Ninemile Creek. The reclamation project will move large piles of dredge mining tailings, fill in mining cutslopes and settling ponds and reconstruct a new stream channel to connect with mainstem Ninemile Creek.

G. What public benefits will be realized from this project?:

The Sawpit Creek project is located on public land managed by the US Forest Service and therefore open to public access. The public will benefit from improved fishing for anglers, improved water quality for the community adjacent to the Lolo National Forest, improved aesthetics as the creek is restored to a natural state, and an increased likelihood of improving fluvial life history forms of native westlope cutthroat trout.

H. Will the project interfere with water or property rights of adjacent landowners? (explain):

No. There are no water rights on Sawpit Creek or Ninemile Creek in the area.

I. Will the project result in the development of commercial recreational use on the site?: (explain):

No

J. Is this project associated with the reclamation of past mining activity?:

Yes

**Each approved project sponsor must enter into a written agreement with the Department specifying terms and duration of the project.**

**IV. AUTHORIZING STATEMENT**

I (we) hereby declare that the information and all statements to this application are true, complete, and accurate to the best of my (our) knowledge and that the project or activity complies with rules of the Future Fisheries Improvement Program.

Applicant Signature:



Date: 11/29/2012

Sponsor (if applicable):

**BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS**  
(Revised 11/28/2012)

WORK ITEMS (ITEMIZE BY CATEGORY)	NUMBER OF UNITS	UNIT DESCRIPTION*	COST/UNIT	TOTAL COST	CONTRIBUTIONS			
					FUTURE FISHERIES REQUEST	IN-KIND SERVICES	IN-KIND CASH	TOTAL
<b><u>Personnel</u></b>								
Survey	70	hours	\$80.00	\$ 5,600.00			5,600.00	\$ 5,600.00
Design	80	hours	\$95.00	\$ 7,600.00			7,600.00	\$ 7,600.00
Engineering	40	hours	\$85.00	\$ 3,400.00			3,400.00	\$ 3,400.00
Permitting	24	hours	\$50.00	\$ 1,200.00			1,200.00	\$ 1,200.00
Oversight	80	hours	\$90.00	\$ 7,200.00	3,600.00		3,600.00	\$ 7,200.00
Labor	120	hours	\$40.00	\$ 4,800.00	3,200.00		1,600.00	\$ 4,800.00
				\$ -				\$ -
<b><u>Travel</u></b>								
Mileage	1750	miles	\$0.55	\$ 962.50			962.50	\$ 962.50
Per diem	10	days	\$100.00	\$ 1,000.00			1,000.00	\$ 1,000.00
<b><u>Construction Materials</u></b>								
Small logs	120	each	\$20.00	\$ 2,400.00		2,400.00		\$ 2,400.00
Boulders	300	cubic yards	\$40.00	\$ 12,000.00			12,000.00	\$ 12,000.00
Screened gravel	100	cubic yards	\$20.00	\$ 2,000.00			2,000.00	\$ 2,000.00
Screened cobble	100	cubic yards	\$30.00	\$ 3,000.00			3,000.00	\$ 3,000.00
Coarse erosion fabric	12	linear foot	\$456.00	\$ 5,472.00			5,472.00	\$ 5,472.00
Fine erosion fabric	12	linear foot	\$94.40	\$ 1,132.80			1,132.80	\$ 1,132.80
Stakes	1,000	each	\$0.75	\$ 750.00			750.00	\$ 750.00
Willow cuttings	4000	each	\$1.00	\$ 4,000.00		4,000.00		\$ 4,000.00
Wetland Seed	0.6	acres	\$342.00	\$ 205.20			205.20	\$ 205.20
Grass seed	4	acres	\$192.00	\$ 768.00			768.00	\$ 768.00
Container stock	400	each	\$10.00	\$ 4,000.00			4,000.00	\$ 4,000.00
<b><u>Equipment</u></b>								
Site prep - excavator	24	hours	\$150.00	\$ 3,600.00			3,600.00	\$ 3,600.00
Site prep - dump	20	hours	\$100.00	\$ 2,000.00			2,000.00	\$ 2,000.00
Excavation and grading	10,000	cubic yards	\$5.00	\$ 50,000.00			50,000.00	\$ 50,000.00
Channel shaping - excavator	40	hours	\$150.00	\$ 6,000.00	6,000.00			\$ 6,000.00
Channel shaping - dump	40	hours	\$100.00	\$ 4,000.00	4,000.00			\$ 4,000.00

**BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS**  
**(Revised 11/28/2012)**

Stream construction - excavator	100	hours	\$150.00	\$ 15,000.00	15,000.00		\$ 15,000.00
Stream construction - dump	40	hours	\$100.00	\$ 4,000.00		4,000.00	\$ 4,000.00
Stream construction - skid steer	60	hours	\$80.00	\$ 4,800.00		4,800.00	\$ 4,800.00
<b>Mobilization</b>							
Mobilization	1	each	\$1,500.00	\$ 1,500.00		1,500.00	\$ 1,500.00
Demobilization	1	each	\$1,500.00	\$ 1,500.00		1,500.00	\$ 1,500.00
				\$ -			\$ -
				\$ -			\$ -
				\$ -			\$ -
<b>TOTALS</b>				\$ 159,890.50	\$ 31,800.00	\$ 6,400.00	\$ 121,690.50
					\$		\$ 159,890.50

\*Units = feet, hours, inches, lump sum, etc.

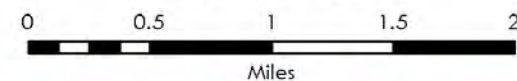
## MATCHING CONTRIBUTIONS

CONTRIBUTOR	IN-KIND SERVICE	IN-KIND CASH	TOTAL
Trout Unlimited	\$ 6,400.00	\$ -	\$ 6,400.00
Lolo National Forest	\$ -	\$ 21,690.50	\$ 21,690.50
Montana Department of Natural Resources	\$ -	\$ 100,000.00	\$ 100,000.00
	\$ -	\$ -	\$ -
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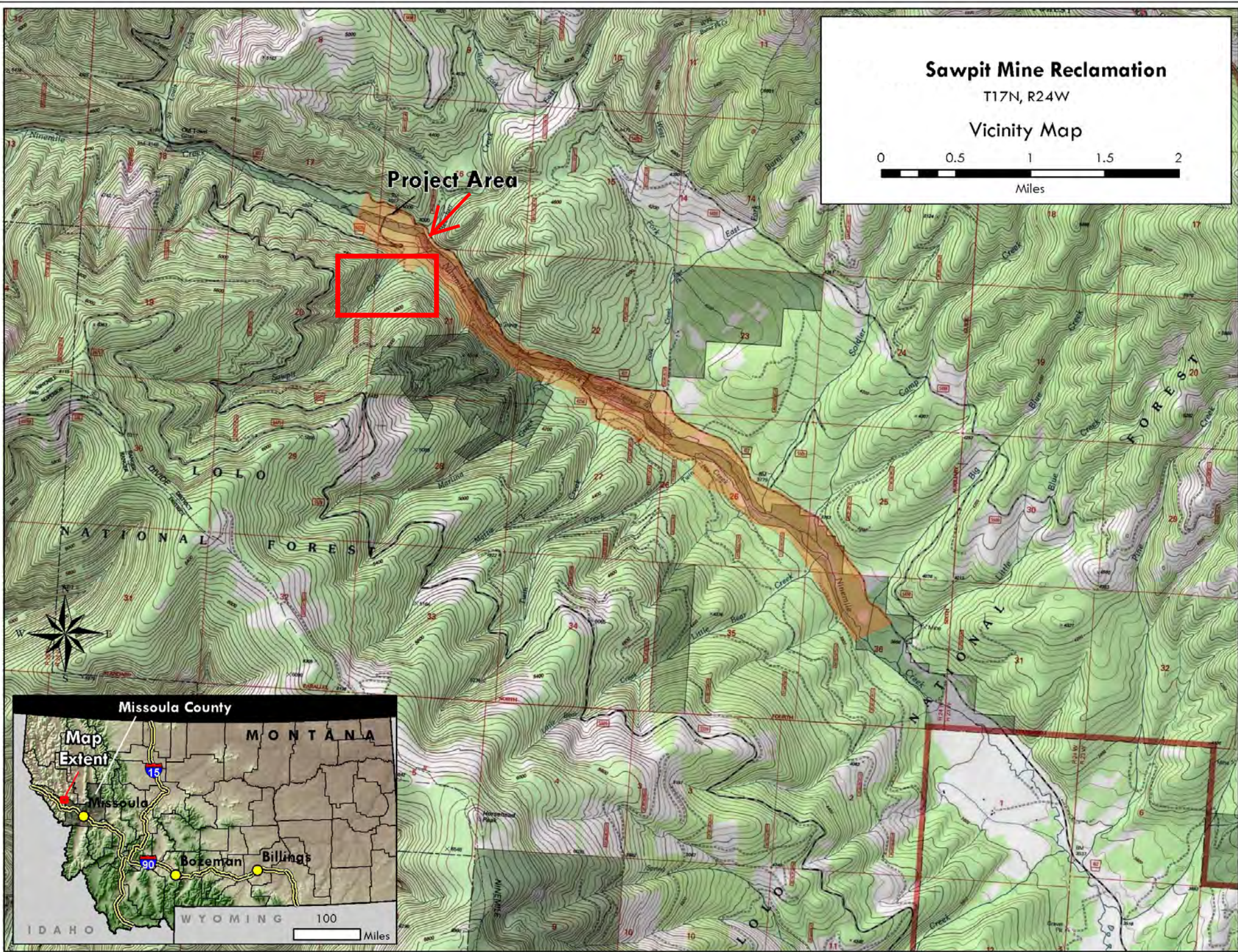
# Sawpit Mine Reclamation

T17N, R24W

Vicinity Map



Project Area



Missoula County

MONTANA

Map  
Extent

Missoula

Bozeman

Billings

IDAHO

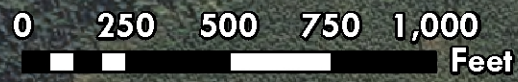
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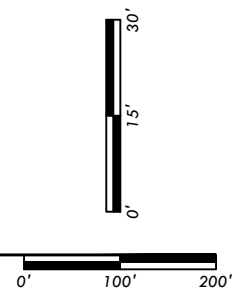
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# Sawpit Mine Reclamation

## Plan View Index

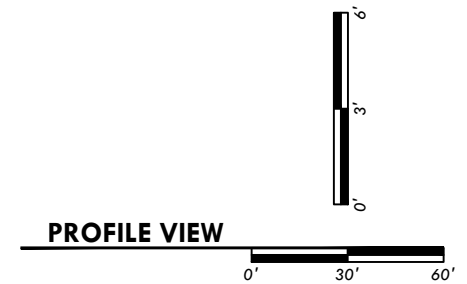
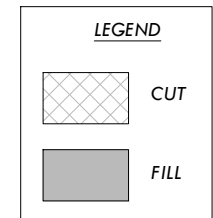
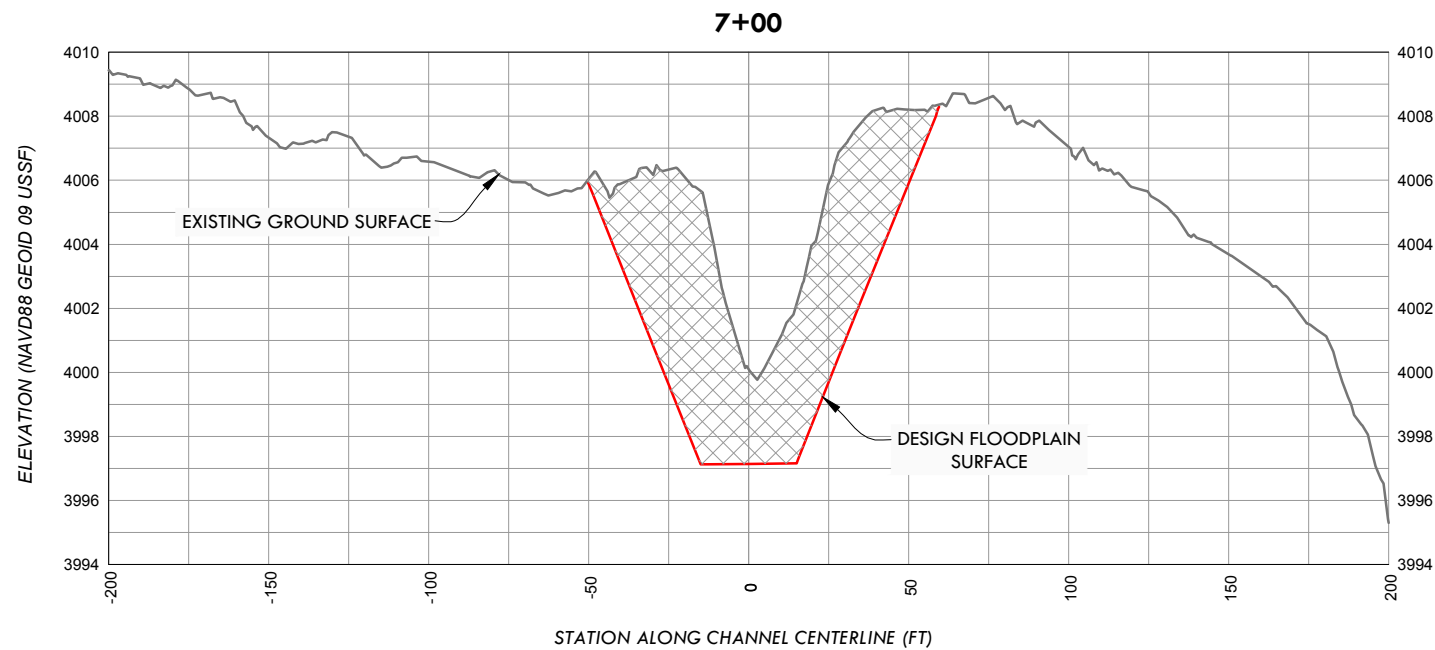
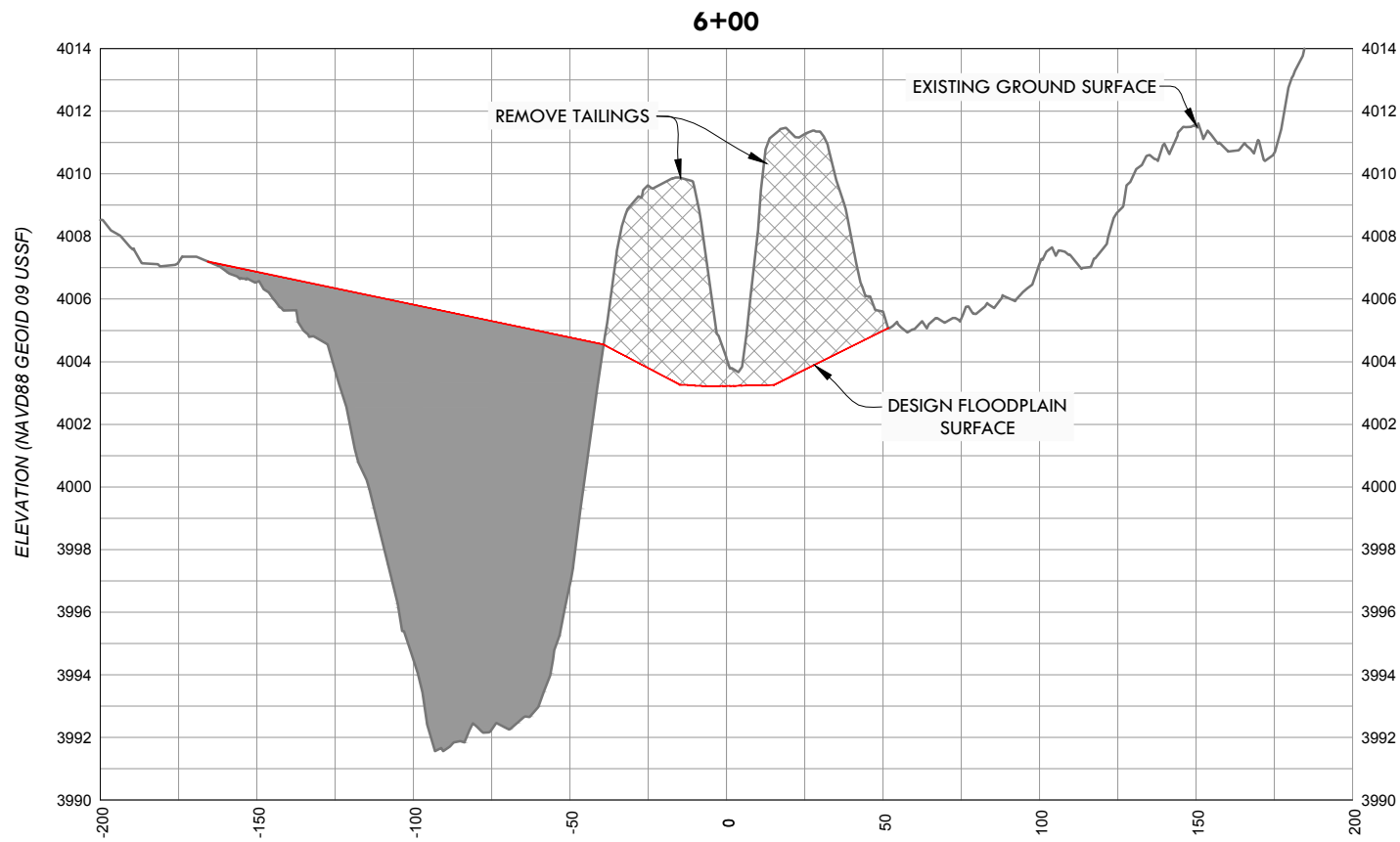


## Sawpit Creek Mine Reclamation



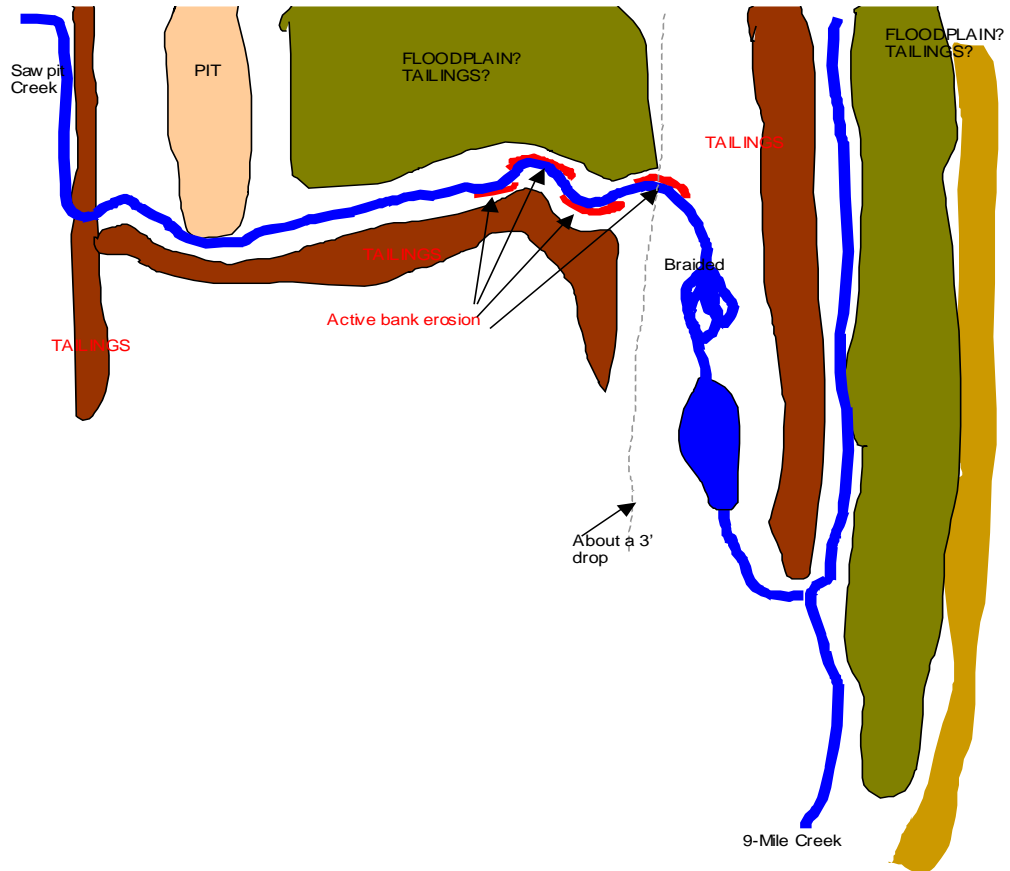
# CROSS SECTIONS

## Sawpit Creek Mine Reclamation



# Sawpit Creek

## Diagram of Site Impacts



**Site Photos**  
**Sawpit Creek**



Headcutting and overland flow



Steep bank into dredge pit



Gullying into dredge pit



Sawpit Creek – existing conditions

**Photos**  
**Methods and techniques**



Constructing soil lifts with willows/containers



Sorting gravel and topsoil



Mine waste excavated and regraded – July 2010



Post restoration photo – July 2012